IN THE CLAIMS

Please add the following claims:

21. A method for adaptively predistorting a base-band signal having an in-phase component and a quadrature component, the method comprising:

obtaining predistortion parameters based on the in-phase component and the quadrature component;

outputting an output signal based on the predistortion parameters;

sampling RF signals generated based on the output signal; and,

providing adaptive feedback based on the sampling.

22. The method as set forth in claim 21 further comprising:

generating the base-band signal by a communication device;

clipping the base-band signal to produce a clipped signal;

filtering the clipped signal to eliminate high frequency components of the clipped signal to produce a filtered signal; and,

increasing the sampling rate of the filter signal to obtain an upsampled signal, wherein the outputting is also based on the upsampled signal.

23. The method as set forth in claim 21 wherein the obtaining of the parameters includes calculating an index value by summing squares of the in-phase component and the quadrature component.

24. The method as set forth in claim 23 wherein the obtaining further comprises retrieving the parameters from a look-up table.

25. The method as set forth in claim 21 further comprises deriving the parameters from polynomial equations having coefficients.

26. The method as set forth in claim 25 wherein the parameters are derived by defining the parameters as A and B and manipulating the polynomial equations as follows:

$A = C_0 + C_1P + C_2P^2 + C_3P^3$ for $A \leq A_m$

$A = A_m$ otherwise

$B = C_4P + C_5P^2 + C_6P^3$ for $P \leq P_b$

$B = (B_{b1} - B_{b2}) + C_7P + C_8P^2 + C_9P^3$ for $P > P_b$

where $P = (I^2 + Q^2)$ is the instantaneous envelope power, A_m is a maximum value imposed on A to prevent the amplifier from being driven deep into saturation, P_b is a breakpoint where the B parameter transitions from one polynomial equation to the other, B_{b1} and B_{b2} are the values of B at $P = P_b$ using the first and second polynomial, respectively, and C_0 through C_9 are coefficients.

27. A system for adaptively pre-distorting a base-band signal having an in-phase component and a quadrature component, the system comprising:

means for calculating an index value based on the in-phase component and quadrature component;

means for retrieving parameters from a look-up table, the retrieving being based on the index values; and,

means for outputting an output signal based on the parameters retrieved from the look-up table and an up-sampled signal.

28. The method as set forth in claim 27 further comprising:

means for generating the base-band signal by a communication device;

means for clipping the base-band signal to produce a clipped signal;

means for filtering the clipped signal to eliminate high frequency components of the clipped signal to produce a filtered signal; and,

means for increasing the sampling rate of the filtered signal to obtain the up-sampled signal.

29. The method as set forth in claim 27 further comprising:

means for sampling RF signals generated based on the output signals; and,

means for providing adaptive feedback to the look-up table based on the sampling.

30. An apparatus for adaptively predistorting a base-band signal, the apparatus comprising:

a module operative to calculate predistortion parameters; and,

an output module operative to generate an output signal based on the predistortion parameters and an upsampled base-band signal.

31. The apparatus as set forth in claim 30 further comprising a clipping module operative to clip the baseband signal.

32. The apparatus as set forth in claim 31 further comprising filter module operative to filter the baseband signal after clipping.

33. The apparatus as set forth in claim 30 wherein the parameters are derived from polynomial equations having coefficients.

34. The apparatus as set forth in claim 30 further comprising a sampling module to increase the sampling rate of the base band signal to obtain the upsampled signal.

35. The apparatus as set forth in claim 30 further comprising:

a receiver operative to retrieve samples of RF signals generated based on the output signals; and,

a processor operative to provide adaptive feedback based on the samples.